

**INFRASTRUCTURE AND
PUBLIC SERVICES**

7 INFRASTRUCTURE AND PUBLIC SERVICES

Growth that is sustainable in terms of resources and services is a major theme of the Plan. For public facilities and services, sustainability means ensuring that new development does not create demands that cannot be met without diminishing the quality of available services. This chapter specifically establishes:

- Policies and standards for public facilities, utilities, and services, that will maintain or enhance the quality of life in Santa Fe;
- Procedures to ensure that growth is approved only upon availability of water and sewer service;
- Thresholds and performance criteria for use in development review to gauge the ability of public services to sustain growth;
- Policies to ensure that infrastructure and public facilities are designed in an environmentally sensitive manner and promote conservation, recharge, and waste volume reduction; and
- An equitable method for paying for facilities and services needed to accommodate new development.

The following themes and guiding policies apply to this chapter:

THEMES

- Affordable Housing - Actively participate in the creation of affordable housing.
- Quality of Life - Enhance the quality of life of the community and ensure provision of community services for residents.
- Sustainable Growth - Ensure that development is sustainable and that growth, conservation, redevelopment, and natural resource protection are balanced.
- Regional Perspective - Maintain a regional growth management perspective.
- Water - Undertake comprehensive efforts to conserve water and ensure adequate supplies with growth.
- Character - Maintain and respect Santa Fe's unique personality, sense of place, and character.
- Urban Form - Promote a compact urban form and encourage sensitive/compatible infill development.

GUIDING POLICIES

7-1 WATER SUPPLY

- 7-1-G-1 Promote measures to increase the surface water supply available to the city.

- 7-1-G-2 Ensure that new development and utility service extensions are approved only upon proven water availability and adequacy of the distribution and treatment system.
- 7-1-G-3 Examine options for financing new water and wastewater infrastructure as well as the technical feasibility, thereby enabling the Governing Body to decide who will pay for water projects while considering projected cost impacts and the potential public benefits of major projects.
- 7-1-G-4 Maintain and update water transmission, distribution, storage, and source of supply infrastructure.
- 7-1-G-5 Develop and implement a comprehensive, integrated water resource plan for water retention and conservation for sites, buildings, uses, landscapes, and plumbing fixtures.

Conservation policies must be enforced. Water conservation and water collection policies must be established and required for existing (within five years) and new development, especially at commercial and government locations, and the drilling of new wells where municipal water service is available must be prohibited.
- 7-1-G-6 Promote measures to protect the acequias, aquifer, and quality of water supply for the city and county residents.
- 7-1-G-7 Ensure that the extension of water service is in accordance with the city's regional growth objectives.
- 7-1-G-8 Promote regional water resource planning initiatives and develop sound management policies to protect regional water resources, create water banking mechanisms and minimize water right speculation.
- 7-1-G-9 Promote implementation of the *Treated Effluent Management Plan* which prescribes the optimum use of the treated wastewater effluent as an additional source of water supply.
- 7-1-G-10 Develop and use water resources that are reliable and sustainable and that are fiscally responsible while preserving groundwater resources for drought emergencies.

7-2 WASTEWATER MANAGEMENT

- 7-2-G-1 Maintain environmentally appropriate wastewater management practices.
- 7-2-G-2 Maintain and update the existing wastewater treatment system.
- 7-2-G-3 Ensure that adequate system capacity responds to future growth and regulatory demands.
- 7-2-G-4 Develop programs that facilitate and improve maintenance and replacement of the wastewater collection system.
- 7-2-G-5 Ensure that extension of wastewater service is in accordance with the city's regional growth objectives.

- 7-2-G-6 Ensure that a *Treated Effluent Management Plan* will optimize reuse and recycling of treated wastewater for nonpotable uses and be a significant part of integrated water resources planning.

7-3 SOLID WASTE MANAGEMENT, WASTE REDUCTION AND RECYCLING

- 7-3-G-1 Reduce solid waste volumes by increasing recycling and reuse to increase the life span of the city/county landfill, for conservation of natural resources, and to reduce costs associated with solid waste management.
- 7-3-G-2 Protect and preserve public health.
- 7-3-G-3 Develop strategically located solid waste convenience centers, yard waste processing, and other facilities in accordance with growth management objectives.

7-4 STORMWATER MANAGEMENT

- 7-4-G-1 Protect and preserve human life, private property, and public facilities from severe weather conditions.
- 7-4-G-2 View the drainage system as a whole entity rather than as a sum of its components.
- 7-4-G-3 Promote natural drainage and recharge of the aquifer and capture of runoff by establishing innovative stormwater management practices and standards.
- 7-4-G-4 Develop and maintain a citywide, user-supported storm water operation, maintenance, and improvement program.

7-5 PRIVATE UTILITIES

- 7-5-G-1 Work with utility providers to ensure adequate service is provided for existing and new development within the city.
- 7-5-G-2 The City of Santa Fe will continue to monitor scientific research regarding the effect on human health due to exposure to electric and magnetic fields. The City of Santa Fe will work with electric, telecommunication, and other facility owners that maintain facilities that emit electric and magnetic fields, and the public to reach public policy consensus regarding the electric and magnetic fields issue..
- 7-5-G-3 The City of Santa Fe will work with utilities (i.e., electric, cable television, telephone, etc.) that own, operate, and maintain overhead wire facilities, to develop a program to place underground, existing and new overhead facilities, particularly along major arterials. The City of Santa Fe will identify funding sources to pay for the placement of new and existing overhead lines underground.

Locating electrical wires below ground and along arterials will improve the aesthetics of the streetscapes and open up views of the surrounding landscape.

Appropriate procedures, in accordance with the Archaeological Review District Ordinance, should be taken when placing electrical wires below ground to protect archaeological resources.

7-5-G-4 Formulate a citywide energy saving policy and program to cut costs and keep dollar resources in Santa Fe.

7-5-G-5 Incorporate practicable solar energy, wind generation, and wind protection concepts in the design and siting of new structures.

Solar energy is an available energy alternative for a future of shrinking natural resources and a booming population.

Wind can generate electric power and can cool structures in the summer. In winter, structures need to be protected from the wind.

7-6 IMPACT FEES

7-6-G-1 Use impact fees as an additional source of revenue to pay all or part of the costs of capital facilities for water supply, wastewater, arterial roads, signalization, parks, open space trails, drainage facilities, fire, police and emergency services generated by new growth in the city and county.

Utilization of impact fees can be extended to facilities for which they are not currently assessed.

7-6-G-2 Develop a comprehensive impact fees program which meets all requirements of the New Mexico Development of Fees Act, Section 5-8-1 et seq., New Mexico Statutes Annotated (NMSA) 1978.

The current impact fees in effect do not comply with all statutory requirements.

7-6-G-3 Utilize impact fees as part of a regional growth management strategy, with higher fees assessed in areas which are not currently served by capital facilities, and lower fees assessed in areas which already have capital improvements in place.

Impact fees may be structured to implement policies related to growth in the Urban Area and infill development areas.

7-6-G-4 Develop impact fees in coordination with Santa Fe County to ensure that the county implements city and county policies for growth and for development of capital facilities in the Urban Area, in areas identified for annexation, and in the Extraterritorial Zone.

Impact fees should be utilized to finance eligible capital facilities in the Extraterritorial Zone to ensure planned, seamless growth which will not unduly burden city facilities in an agreed-upon urban area.

7-6-G-5 Waive impact fees in order to implement other city policies, including affordable housing, infill development, and economic development.

Waiver of impact fees should provide incentives which will help implement these policies. The city should identify other sources of financing for capital

improvements to replace revenue from impact fees waived to meet other policy objectives.

This Plan already contains policies advocating affirmative measures to create affordable housing. The city will have to determine if it wants to waive impact fees to fulfill other policies and ensure that these policies are clearly set forth in this Plan.

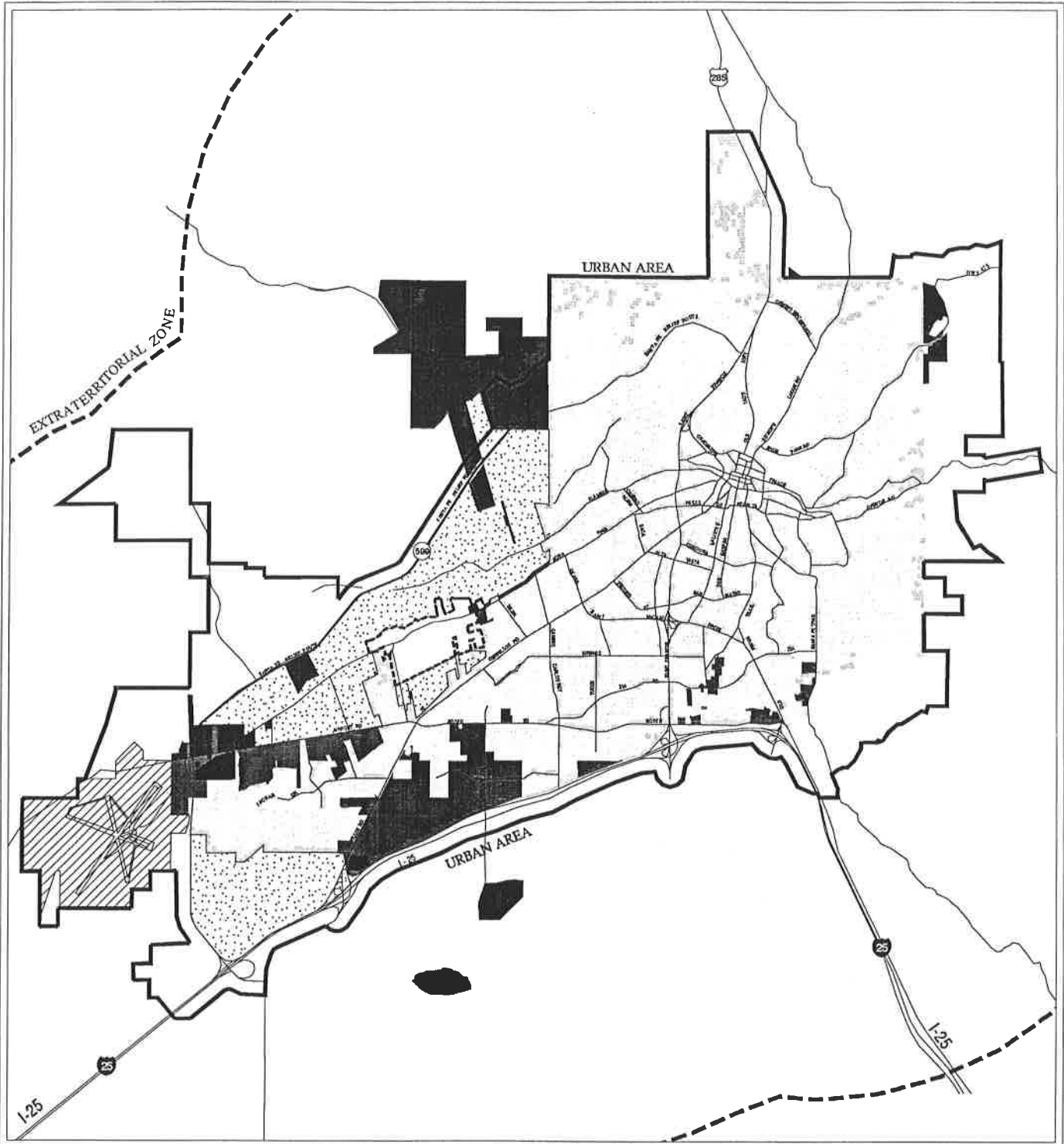
7.1 WATER SERVICE

7.1.1 WATER SYSTEM

Water service is provided for nearly all Santa Fe residents by the City of Santa Fe through the Sangre de Cristo Water Services Division. The City of Santa Fe acquired the Sangre de Cristo Water Services Division from Public Service Company of New Mexico in July 1995. The purchase included all physical facilities and water rights required to produce and deliver water. The existing service area includes all land within the corporate limits of the city, plus some portions of the Extraterritorial Zone. The latter are served based on agreements made between the utility's previous owner and the individual customers. Figures 7-1 and 7-2 show the existing water service area and schematic system layout to serve future development. As part of the purchase agreement between the city and Public Service Company of New Mexico, Public Service Company of New Mexico Water Services would continue to operate the water system on behalf of the city for a period up to four years. The Sangre de Cristo Water Services Division, part of the city's Public Utilities Department, is responsible for the management of water and for the development of an integrated water resource management plan. This is a 40-year plan needed to provide for water right reservations as required by state law. The city is currently leading the effort to develop a regional water plan. Growth patterns identified through the General Plan will be utilized for determining the needs for future supply development.

7.1.2 WATER SYSTEM FACILITIES

The main features of the city's water supply system are the Santa Fe River storage dams and treatment plant, the city well field, the Buckman well field, the storage tank system, and the distribution network. The total production for 1995 was 3.97 billion gallons, generated by three separate sources – the Santa Fe River watershed, the city well field, and the Buckman well field. These sources produce 41, 14, and 45 percent, respectively, of the total supply. During the summer of 1996, the city experienced a severe drought which resulted in a 20 percent reduction in the available water supply. The city quickly implemented emergency regulations that limited water consumption and potential waste of the resource during the crisis. A long-term conservation ordinance was later adopted to reduce water consumption during the peak months of the year between June and October.



Interim Utility Service Area

- Proposed Urban Area Boundary*
- Incorporated Water Service Area Boundary*
- Water Service Area Boundary Extensions*
- LEVEL 1: Proposed Utility Service Area*
- LEVEL 2: Proposed Utility Service Area*
- Water Services to Existing City Facilities*
- Proposed Water Service Area Boundary Extension*
- Agua Fria Traditional Historic Community*

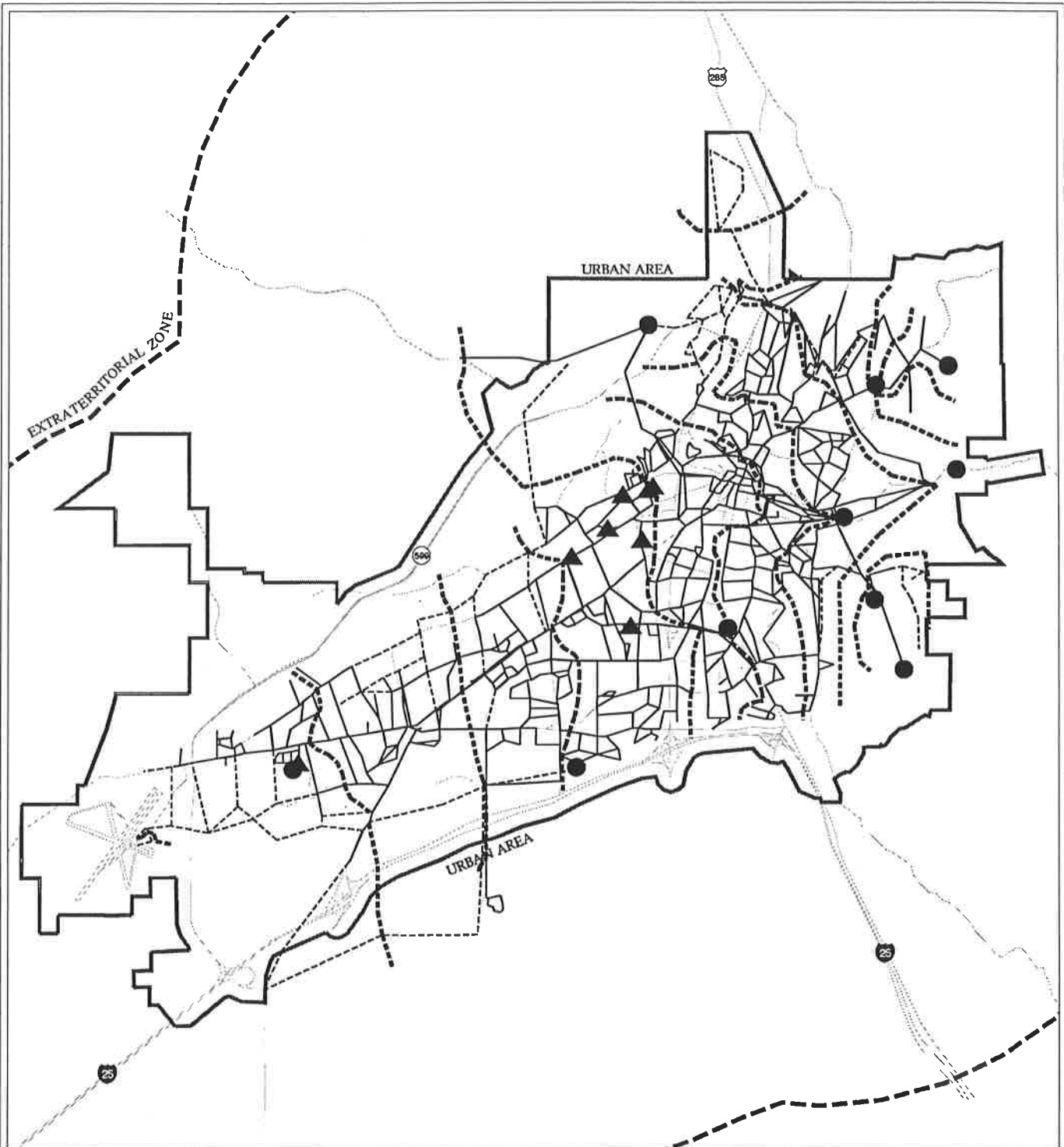


Scale in Miles








City of Santa Fe
GENERAL PLAN

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Figure 7-1



Water System Approved Development

-  Proposed Urban Area Boundary
-  City Well
-  Existing Tank
-  Pressure Zone Boundary
-  Existing Modeled Distribution Pipe Network
-  Proposed Pipe Additions to Network
-  Major Roads



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Figure 7-2

Santa Fe River Watershed

This source provides the highest quality water at the lowest production cost, about \$0.47 per 1,000 gallons. However, this source is the most affected by variations in annual precipitation. Annual yields may vary widely between a maximum allowable diversion from the reservoir system of 5,040 acre-feet and the historic low yield of less than 1,000 acre-feet that occurred in 1951. The average annual flow identified during the entire period of record, beginning in 1914, is 4,650 acre-feet.

The system's treatment capacity provides for an average flow of 10 million gallons per day. For relatively short periods of time, a combination of conventional treatment and a filtration plant can be used to produce an additional two million gallons per day.

Santa Fe Well Field

These wells tap the Tesuque formation, which is locally recharged by the Santa Fe River. The wells were originally developed in the 1950s and 1960s. Some upgrades were performed in the 1980s, but for the most part, these wells are nearing the end of their design life. The condition of the wells and the lowering of the water table has led to a reduced production from 4,000 acre-feet (2,600 gallons per minute) in the 1970s to 2,600 acre-feet (1,600 gallons per minute) today. Furthermore, water production from three of the eight wells has been either curtailed or totally restricted due to contamination problems. The cost of production for this well system averages \$0.51 per 1,000 gallons. The city is executing an extensive well reconstruction program to recover lost production in this well field.

Buckman Well Field

The Buckman well field is located approximately 15 miles northwest of the city, adjacent to the Rio Grande. This system consists of eight wells drilled to depths between 900 and 1,600 feet into the Tesuque formation, plus four booster stations, a 20-inch transmission line, and a ten-million gallon storage tank located in the northwest sector. The cost of production for this system averages \$1.10 per 1,000 gallons.

Water from the Buckman wells is the most expensive produced in the system, because of the high costs of raising it 1,500 feet from the Rio Grande to the city. Pumping at Buckman is generally used to supplement the other two sources and is thus heaviest during summer peak demands. As the city has continued to grow, so has pumping at Buckman, which in 1995 approached 6,000 acre-feet (out of a total 13,240 acre-feet). Should there be a significant drought, the city would have to rely even more heavily on the Buckman and Santa Fe wells.

Storage and Distribution Network

Water from all three sources is treated with chlorine and fluoride prior to delivery into a network of storage tanks and 420 miles of transmission and distribution lines. The storage system consists of nine tanks ranging in size from 500,000 to 10 million gallons, totaling 35.1 million gallons.

Operations and Maintenance

In 1995, the system provided water for 24,000 customers with metered service. Of these, 21,000 were residential customers, while the remaining 3,000 were institutional and commercial, include multifamily dwellings. Residential water use is approximately 52 percent of the total. An estimated eight to ten percent of the total production is lost to line leaks, while an additional five percent is delivered but under metered. The peak daily production in 1995 was 20 million gallons/day, while the peak daily demand was 22 million gallons/day. The peak daily production was exceeded during 12 nonconsecutive days during the year's summer.

7.1.3 WATER SUPPLY AND WATER RIGHTS

The city holds six distinct, separate water rights, as summarized in Table 7.1 below.

Water Rights	Type	Quantity (acre-feet per year)
1. Santa Fe River	surface	5,040.0 ^a
2. Santa Fe River	groundwater	4,967.0'
3. Buckman Wells	groundwater	10,000.0'
4. Rio Grande	groundwater	130.9 ^b
5. Rio Pojoaque	surface	47.4 ^b
Rio Tesuque	surface	28.0 ^b
6. San Juan-Chama	surface	5,605.0 ^b
^a Santa Fe River Canyon supplies include St. Michael's Well		
^b These rights are collectively used to offset the pumping effects of Buckman pumping on the Rio Grande and the tributaries.		

Santa Fe River Watershed

The Sangre de Cristo Water Services Division has successfully reconstructed the Ferguson and Alto wells and has redrilled the Torreon well. The Santa Fe well is being refurbished as part of an aquifer remediation program. Of all the sources, the Santa Fe River water is most affected by drought. The reservoirs on the Santa Fe River depend on snow-melt and rainfall in the Sangre de Cristo mountains—consequently their yield varies from year to year. In a good year, the reservoirs yield the entire 5,040 acre-feet that the city is permitted to use from the river. However, in 1951, a drought year, the yield dropped below 1,000 acre-feet.

Santa Fe Well Field

The city's wells, which tap into the Santa Fe River aquifer, are aging, and consequently their yield has dropped from over 4,000 acre-feet annually, in the early 1970s, to around 2,000 acre-feet currently. Furthermore, in the last five years, two of the eight wells have been

found to be contaminated by petroleum by-products. Adding new wells in the city, or replacing existing ones, is difficult and expensive. Most of the city wells were drilled before 1956, the year the State Engineer established the Rio Grande Basin. Once the Basin was declared, public hearings were required before new wells could be drilled. Only two new wells were drilled in the city after 1965, and both faced heated opposition from other well owners in the area. The only city well added to the system in the last 30 years was a preexisting well hooked onto the system in 1991.

Buckman Well Field

The Buckman well field is located approximately 15 miles northwest of the city, adjacent to the Rio Grande. The city has the right to take up to 10,000 acre-feet annually from the Buckman wells. A requirement of the permit for this right is that the city must have water rights on the Rio Grande and Pojoaque-Nambe and the Tesuque to offset the effects of the pumping on these streams.

It must be recognized that the offset requirements for the Buckman well field will increase with time and, in theory, will eventually reach 100 percent of the total produced for this purpose. The city and the county of Santa Fe hold 5,605 acre-feet of San Juan-Chama Project water through a contract with the U.S. Bureau of Reclamation. The Buckman Rio Grande offset requirements are met using a portion of this water. There is a significant annual surplus, which has resulted in storage of about 30,000 acre-feet in reservoirs on the Rio Chama. This is also available for surface diversion. Other water rights held are those required for tributary offsets on the Pojoaque-Nambe and Tesuque stream systems. These requirements are currently less than 140 acre-feet annually, but will increase with time if Buckman wells continue to be pumped at current or increased rates.

Offsetting the effects of the Buckman pumping on the Rio Grande has not been a problem in the past. To date, the city's allocation of San Juan-Chama water (water diverted from the San Juan River to the Rio Grande via the Chama River, and allocated to users in the Rio Grande Basin) has been more than adequate to offset these. However, offsetting the effects on the tributaries has proved more difficult, because there are very few rights for sale on these. One measure of their scarcity is their price. One acre-foot of water rights per year on the Pojoaque-Nambe currently cost around \$10,000-20,000 (bid and asked) per acre-foot, and on the Tesuque approximately \$25,000-50,000. This compares to prices of approximately \$1,500-3,000 for one acre-foot for water rights on the Rio Grande.

7.1.4 WATER DEMAND

The city Sangre de Cristo Water Services Division has planning responsibilities to ensure an adequate production margin exists between total demand and total supply such that the city is not vulnerable to drought, aquifer degradation, and system failures. Industry specialists recommend a minimum 10 percent production margin over total demand, but the city aims at a 20 percent target reserve margin. In 1995, the production margin was calculated to be only 3.5 percent, even as the full supply of 5,040 acre-feet from the Santa Fe River and an overdiversion of the San Juan-Chama water of 240 acre-feet were utilized.

State water law allows for municipalities, counties, and universities to reserve water rights for a 40-year planning period. Reservations are granted by the State Engineer based on realistic growth projections and reasonable expectations that water is available for

appropriation or acquisition. The city's 1995 water-rights ownership of approximately 20,000 acre-feet and the current methods of utilizing these rights is adequate for the projected average annual growth for the short-term only (three to five years). Additional water supplies and resource optimization measures will be necessary to meet even the minimum growth rate anticipated (Table 7.2).

TABLE 7.2 POPULATION AND WATER DEMAND PROJECTIONS FOR THE URBAN AREA TO 2020			
Year	Planning Area Population	Water Demand in Acre-Feet	Percent Increase Per Year
1985	52,890	8,150	—
1987	57,099	9,134	6
1990	63,412	10,073	3
1993	69,024	11,641	3
1995	72,766	11,693	3
Notes:			
1.	Population projections from Southwest Land Research.		
2.	1985–1993 historical water demand data from City of Santa Fe.		
3.	Future population projections may change based on decisions made on the General Plan (buildout potential).		
4.	Population in column 1 is larger than the population served by Sangre de Cristo Water Services Division. Therefore, water projections in column 2 should not be used to calculate average per capita use..		
Source: Bohannon-Huston			

7.1.5 FIVE-YEAR STRATEGIC PLAN

Elements needed to manage water resources over the short-term planning scenario include the implementation of a comprehensive citywide water conservation program, full development of the existing surface and groundwater resources to the limits allowed by water rights and implementation of an effluent reuse management plan. These efforts will allow the city to increase the reserve margin in the supply system and meet the short-term anticipated growth. Toward the end of the five-year period, construction of a surface water diversion system on the Rio Grande will provide the city and county with an opportunity to take full and direct advantage of the San Juan-Chama water and other water sources.

7.1.6 ACEQUIAS

Acequias are irrigation ditches which made agriculture possible for the Indian and Hispanic settlers in early New Mexico and have served a very important cultural and economic role in the community. Acequias traditionally have cooperative ownership and maintenance responsibilities that closely knit communities together. In addition to distributing water and

defining communities, acequias are a political subdivision of the State of New Mexico, established pursuant to sections 73-2-1 to 73-2-64 NMSA 1978.

Individual members of an acequia hold water rights. Under New Mexico water law, these water rights may be severed from the land and the acequias to which they are appurtenant, where they are used for agricultural purposes, to other locations, to be used for other purposes. As a result, the survival of acequias in Santa Fe is increasingly threatened by transfer of water rights for industrial and other urban and recreational uses. Loss of communal responsibility for the acequias results in the destruction of the cultural and economic viability of the community.

Diversion of water from acequias also threatens one of the region's major resources. Since 1985, the state has required that the criterion of water conservation and public welfare, in addition to the criteria of impairment of existing water rights, be applied to applications for transfers of water rights. If the city's and county's public interest included preservation of acequias and the water within them for agricultural uses, this would have to be considered by the State Engineer in making transfer decisions.

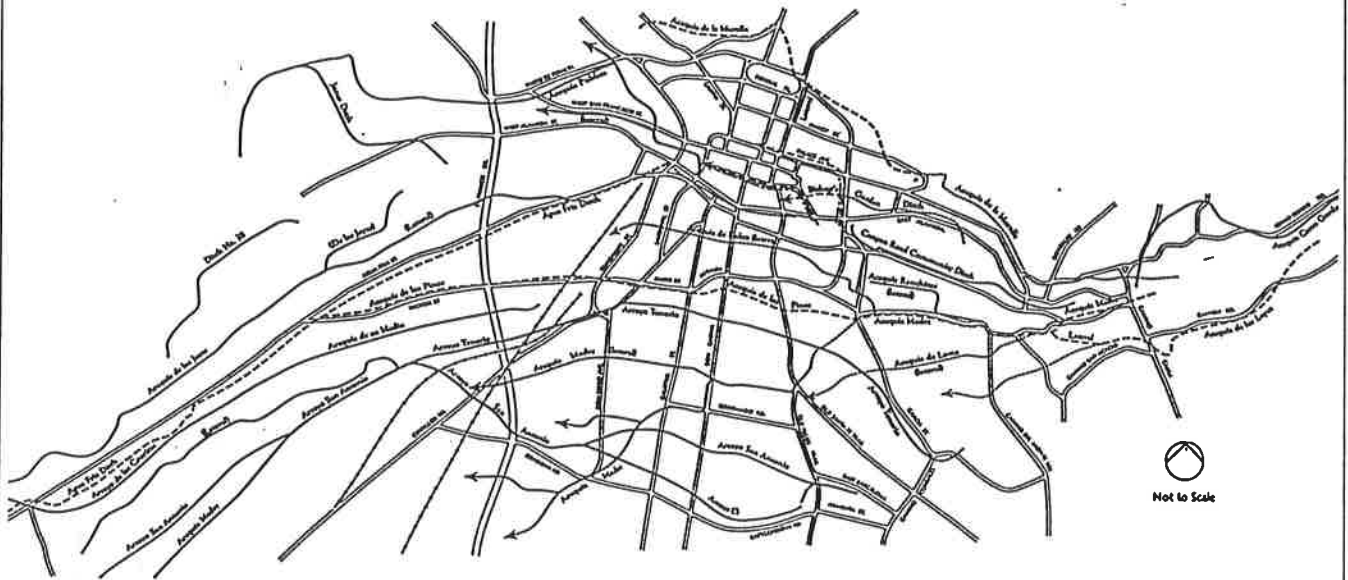
Retirement of water rights is another form of "transfer," which threatens water resources in the Santa Fe area. Retirement particularly impacts acequias and agricultural lands due to pressure to "retire" water rights from rural areas for use in urban areas.

Alternatives for preserving water rights in acequias include enhancing the viability of agricultural uses, pooling of water rights to prevent individual sales, and holding water rights in trusts. Acequias can also be listed in the National Register as historic structures or districts, because they symbolize agricultural settlement and an agricultural way of life from earlier periods. As a result, they can be regulated through zoning. Transfer of development rights programs can also be utilized. Figure 7-3 shows the location of all historic acequias in Santa Fe.

The city fully recognizes the senior rights that the four remaining acequias maintain. The Sangre de Cristo Water Services Division is actively working with the respective mayordomos to help reserve their ability to utilize the water for traditional purposes.

7.1.7 TREATED EFFLUENT MANAGEMENT PLAN

The city is nearing completion of a *Treated Effluent Management Plan* which would set the parameters for the optimum utilization of treated wastewater effluent as an additional source of water supply. The plan will be implemented over the planning period, supported by the rate payers and other treated effluent users. Table 7.3 below summarizes the current commitments that the city has with regard to private use of this resource.



Historic Acequias

- Acequias known or likely to have been in operation in the 19th century
- - - - - Known or likely 18th century acequias
- Acequias probably in operation in the 18th century
- · — · — Acequias possibly in operation in the 17th century

Note: Map illustrates the acequias only in the northern portion of the urban area. Acequias in the southern portion have not been fully surveyed.



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Figure 7-3



Casa Sena



Many acequias in Santa Fe have fallen into disrepair, and their water flow has been diverted. The General Plan calls for historic district or landmark designation for acequias and for the preparation of an acequia restoration plan.



TABLE 7.3 (1995) CITY OBLIGATIONS FOR TREATMENT PLANT EFFLUENT	
User	Million Gallons Per Day
Santa Fe Country Club	0.70
Santa Fe Green Polo Fields	0.70
Santa Fe Racing (The Downs)	1.20
Regional Landfill/Golf Course	<u>2.00^a</u>
Total Obligation	4.60
^a Committed for future use.	
Source: Bohannan-Huston	

7.2 WASTEWATER MANAGEMENT

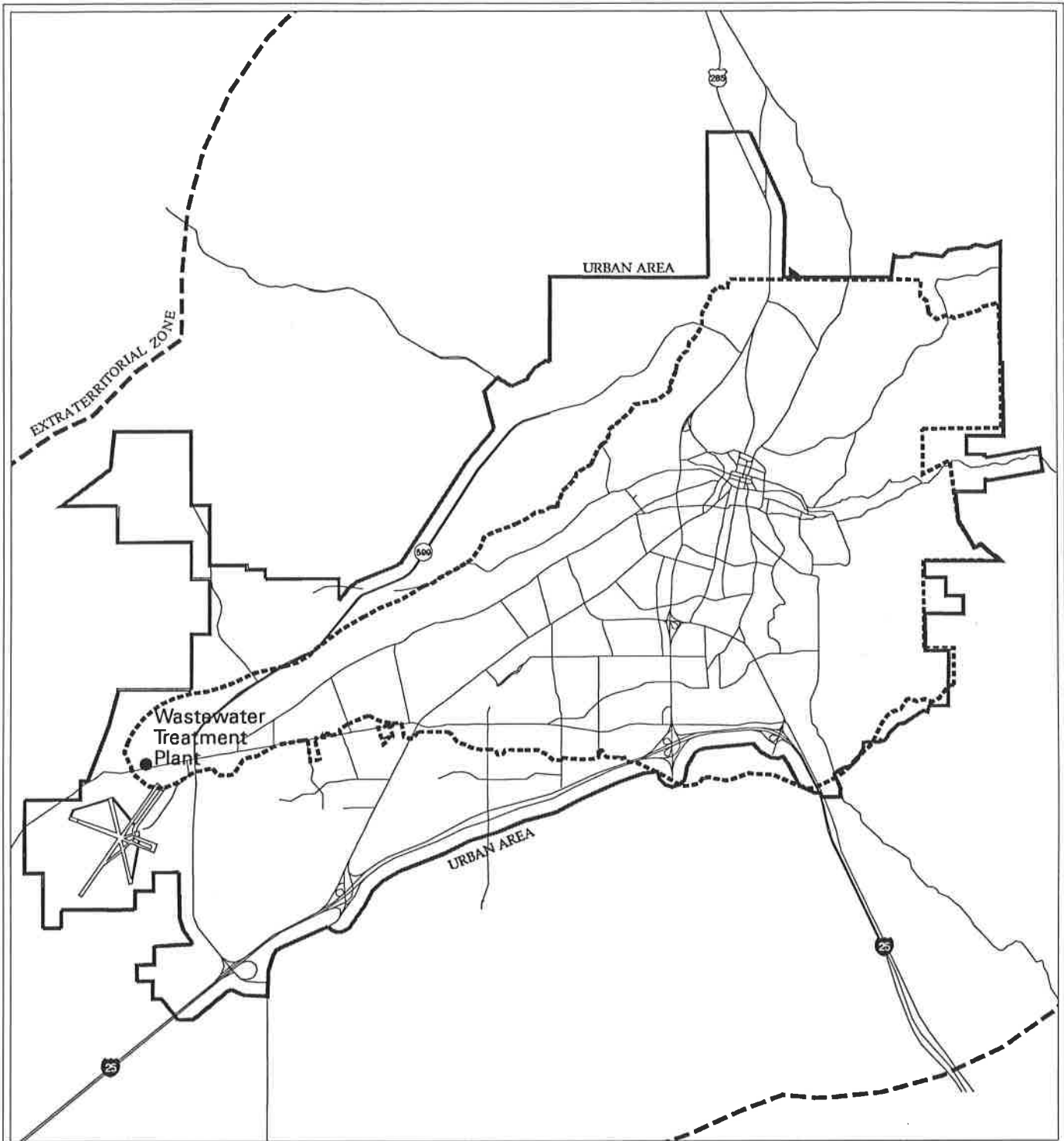
The city's wastewater treatment facility was built in 1963 on Paseo Real, just north of the Municipal Airport and has been updated and expanded several times since. Wastewater is managed by the Wastewater Management Division, which performs all administrative duties, plant operations, plant maintenance, development review, facility planning, treatment, collection-system maintenance and repair, and mapping and modeling of the city's sewer system.

The wastewater service area generally includes lands whose sewage can drain by gravity to the city's wastewater treatment plant. This area includes all lands within the incorporated limits, plus some outside of it. The county has adopted the city's sanitary sewer regulations (Chapter 22 of the City Code) and both entities have a joint powers agreement for the enforcement of such regulations in the unincorporated areas served by the city's system. Portions of the service area that do not comply with the gravity flow criterion described above, such as Monte Sereno, Pueblos del Sol, Nava Ade, and others have been authorized to be served via pressurized sewers for that period of time until gravity flow sewers become available for their use. The service area based on the gravity flow criterion was adopted by City Council in September of 1985, as part of the federal grant agreement the governing body approved for the financing of wastewater system improvements.

7.2.1 COLLECTION SYSTEM

The existing (1996) public collection system consists of approximately 280 miles of gravity sewer lines. Growth over recent years has averaged seven to ten miles a year.

Several lift stations, some of which are privately operated and maintained, are used because of topographical constraints to gravity flow. The treatment plant receives an average of more than seven million gallons/day of raw sewage, representing a total load of biodegradable solids of 13,000 pounds of biochemical oxygen demand. Daily peak flows are approximately 1.85 times the daily average. Figure 7-4 shows the existing and proposed wastewater system.



Wastewater System

- Proposed Urban Area Boundary*
- Modeled Sanitary Sewer Lines*
- Sanitary Sewer Service Area*
- Major Roads*



Scale in Miles

City of Santa Fe
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Figure 7-4

To minimize the potential for soil and groundwater contamination by malfunctioning septic systems, the city discourages on-site treatment facilities. In addition, where terrain or other environmental conditions prevent construction of or maintenance access to gravity lines, the city encourages installation of low pressure grinder pump systems. This results in low maintenance package units on the homeowner's property, as well as low pressure sewer in the street. At this time, the installation and maintenance of the grinder pump units are the responsibility of the homeowner.

7.2.2 CURRENT PLANNING EFFORTS

Expansion of Collection System and Treatment Plant Capacity

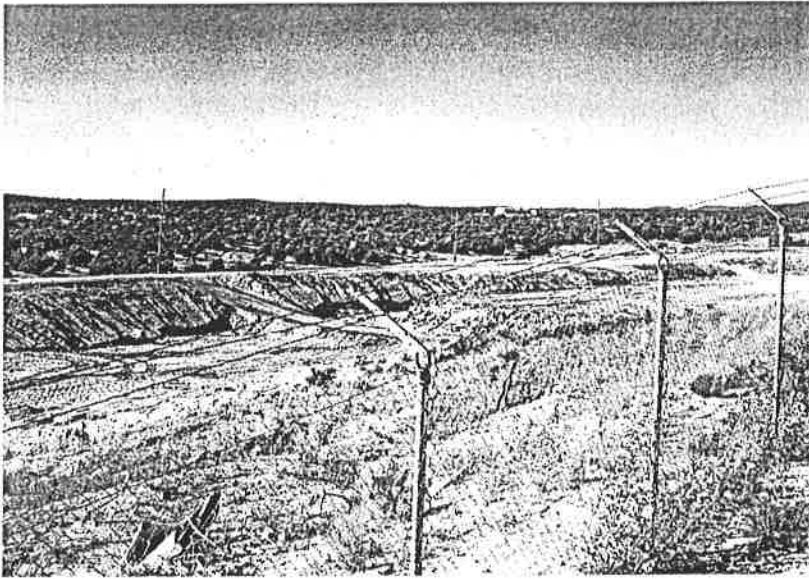
Some of the existing facilities have reached their hydraulic limits with the existing flows. The city maintains a five-year plant improvements project, part of the purpose of which is to keep pace with growth and regulatory demands. Included in the five-year plant improvements project is design and installation of ultra-violet disinfection facilities to comply with regulatory requirements. A large percentage of the wastewater collection system suffers from root intrusion and grease accumulation that limit their capacity and increase the likelihood of sewage overflows.

Sewer Replacement Program

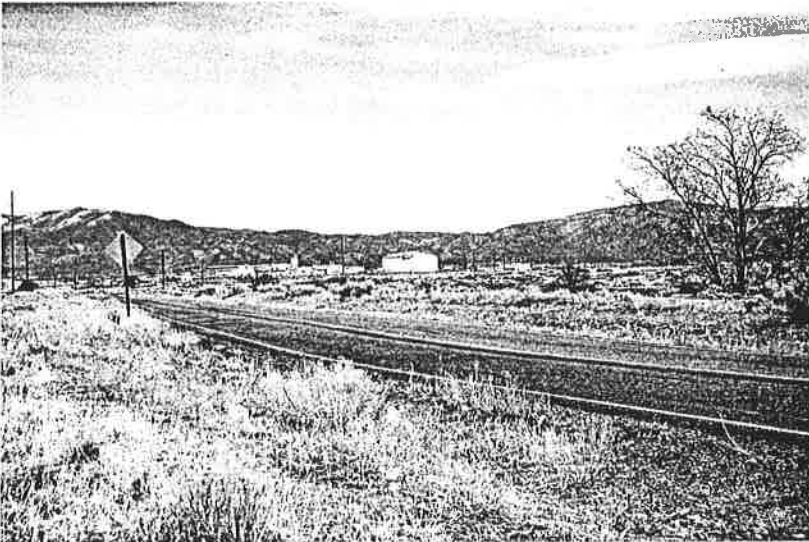
The city began funding a collection system rehabilitation program in 1988 to plan, design, and implement rehabilitation and replacement of failing sewer lines. Rehabilitation of the collection system is an on-going priority. The sewer infrastructure in older areas of Santa Fe are deteriorating and are in need of replacement. In addition, the city is faced with the replacement of existing concrete sewer pipes because of advanced deterioration from hydrogen sulfide gases which are present in the sewer. Replacement projects will need to be funded to keep up with the city's aging infrastructure. Replacement of aging sewer infrastructure in certain areas of the city must always be assigned a high priority, in order to preserve the system's ability to meet its demands and purpose, protecting the environment as well as public and private property from damage. Funding must be earmarked annually for this task and generated as part of the rate revenue.

Wastewater Master Plan

In 1990, the city began a three-phase *Wastewater Master Plan*, of which the first two phases have been completed. Phase 1 consisted of a flow monitoring study to establish existing wastewater flow rates and identify potential capacity problems. Phase 2 consisted of compiling an inventory of the existing collection system and developing a computer model to calculate flows and capacities in all major trunk sewers. In addition, Phase 2 identified capacity deficiencies, evaluated the condition and maintenance of the collection system, and developed a facility management system. Phase 3 will address expansion of the collection system. The *Wastewater Master Plan* will need to be updated based on the new General Plan and the new land use assumptions/service area boundaries. The new master plan will also take advantage of the information that is being collected on the Geographic Information System and will likely have a new wastewater flow capacity model that works with the Geographic Information System.



The existing landfill in the northwest sector is now closed.



The city's Wastewater Treatment Plant is located southwest of the city to allow for gravity sewage flow.

7.2.3 GROWTH AND REUSE

System Expansion to Accommodate General Plan Growth

To accommodate growth, the city would need to extend existing interceptor lines to areas proposed for urban development, currently reliant on on-site waste systems within the city limits, and potentially within the Urban Area. The majority of areas planned for development would be served by gravity flow, while a few areas would require the construction of lift stations.

Reuse

The *Treated Effluent Management Plan* has been completed and will be implemented over the next few years. Final alternatives are being developed now to optimize the reuse and recycling of wastewater for nonpotable uses and include a long-term approach that supports the city's overall water resources strategy. The preliminary concept is to optimize delivery of nonpotable secondary effluent for irrigation, in-stream flows to the Santa Fe River downstream of the wastewater treatment plant, and provide a return flow of treated effluent to the Rio Grande. In addition, effluent may be pumped upstream to just below the city's raw water reservoirs to augment flow in the Santa Fe River through the Downtown area for recreational use and for indirect recharge of the Santa Fe city wells. It is not anticipated at this time that the city will recharge the Santa Fe Basin aquifer through a series of injection wells.

Aquifer Recharge

A technique used in some parts of the country is to recharge the aquifer by pumping the effluent from a treatment plant through a series of injection wells.

7.3 SOLID WASTE

Like elsewhere in the country, burying refuse has been the only disposal method employed through much of this century in Santa Fe. Although waste incineration has been practiced in the city from the late 1920s, the practice was brought to an end in the 1960s. In the last twenty years the city has modified collection methods and made efforts to reduce the volume of solid waste; however, landfilling remains the final form of disposal. The City is committed to reducing its solid waste stream and promoting waste reduction, composting, and recycling.

7.3.1 DISPOSAL

The city landfill which had been operated in the northwest sector for most of the past thirty years is no longer operational. A new city-county landfill, designed and constructed to operate in accordance with the latest federal and state regulations has been opened in place of the old facility. To provide a centralized point of concentration for the refuse collected within the service area and to reduce the cost of transporting this refuse to the new landfill, the city owns and operates a modern transfer station in a location adjacent to the old landfill site. This facility was designed for a capacity of 500 tons of refuse a day. In order to meet the

needs of present and future development in the southern and southwestern quadrants, smaller solid waste collection facilities or convenience centers will be developed. The location and capacity of each individual center will be as dictated by the solid waste management master plan to be developed and periodically updated by the Solid Waste Management Division.

Landfill Closure

The old landfill facility will be closed in accordance with federal and state requirements and conditions contained in the closure plan. Landscaping and land use consistent with this plan will be funded for design and implementation.

Regional Landfill

The regional landfill is designed to meet the city's and the county's disposal needs for 100 years. The governance of the facility has been delegated by a joint powers agreement to a board comprised of four City Council and four County Commission members. The agreement, which was approved in February 1995, created a Solid Waste Management Agency and designated the Board as the managing authority of the agency.

The adoption of new methods of waste reduction or reuse (e.g., a materials recovery facility) by one locality could significantly affect the financial integrity and operational efficiency of the regional landfill. For this reason, the city and the county must maintain a continuous dialogue regarding new waste management ventures.

Transfer Station

The city's solid waste transfer station began operations in May of 1997, under a permit granted by the State of New Mexico and in compliance with federal and state regulations. This facility is required to process and evacuate all waste received each day of operation, with the exception of recyclable material which can be stored as required. Waste is transferred to the city-county landfill by tractor trailers with a cargo capacity of 20 tons. Transfer traffic is ultimately designed to use the Santa Fe Relief Route, thus avoiding the transportation of high volumes of solid waste through urban arterial roads.

7.3.2 WASTE VOLUME REDUCTION PROGRAMS

Several initiatives are being pursued toward reducing the volume of waste generated in the city's service area. These initiatives include recycling of waste materials, reduction of waste at the source, waste exchange, backyard composting, green waste processing and utilization, and construction and demolition waste reprocessing.

7.3.3 LOOKING AHEAD

The city's approach to solid waste collection and disposal—collect and bury—has remained relatively unchanged through the majority of the twentieth century. It has been reactive to the waste disposal needs of the area. However, at the end of the century, the city finds itself confronted with a much more complicated and expensive network of waste management issues—transfer and transport, reduction, expanding service areas, and heavily regulated disposal requirements.

Because of this, comprehensive efforts are needed to deal with the financial and operational demands of changing regulations, technologies, service demands, and expectations regarding solid waste collection and disposal. The General Plan provides the overall policy direction for this purpose. However, detailed efforts will be needed, and the General Plan proposes preparation of a comprehensive solid waste management master plan, which should be updated every five years.

7.4 STORMWATER MANAGEMENT

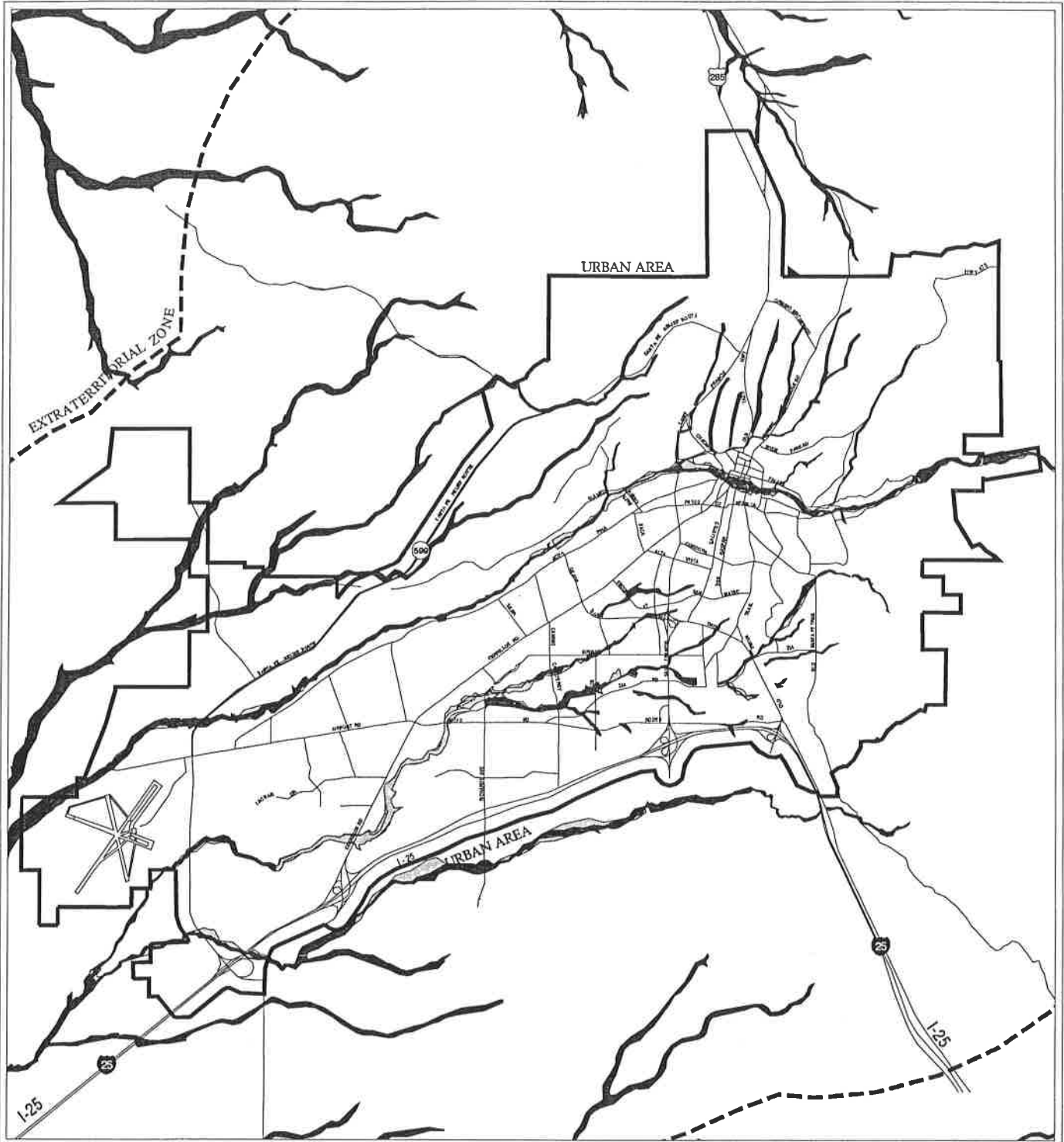
The City of Santa Fe is located within two watersheds: the Santa Fe River (northern Santa Fe) and the Arroyo de los Chamisos (southern Santa Fe). The Santa Fe River Basin encompasses a total of 42 square miles, including the Downtown area, the foothills to the north, Nichols and McClure reservoirs on the east, and the city limits on the west. The Arroyo de los Chamisos Basin encompasses approximately 22.8 square miles, including all areas south of Cordova Road, east of Cerrillos Road, and north of Interstate 25. Storm drainage within the basins is routed mainly through arroyos and a small number of storm drains.

In 1980, the Federal Emergency Management Agency completed a Flood Insurance Study to determine the flows on the major arroyos and the limits of the 100-year floodplain throughout the city. Federal Emergency Management Agency also conducted a Flood Insurance Study for some unincorporated portions of Santa Fe County, which was completed in 1985. Floodplains are digitized in the city's Geographic Information System database and are also shown on Figure 7-5.





Ever increasing development within the greater Santa Fe area drainage system has prompted the need for a comprehensive master drainage plan. In Fall 1993, two drainage management plans were prepared for the city: the *Santa Fe Drainage Management Plan* for the Santa Fe River Watershed, and another for the Arroyo de los Chamisos Watershed. These drainage management plans determine the ability of the existing drainage facilities to pass the 100-year flows, size drainage improvements, determine costs, and set priorities for constructing recommended improvements.

The city's storm drainage control structures in the Urban Area are not considered adequate for existing conditions. Without appropriate modifications to the system, further development would increase the potential for flooding and property damage. Upgrades to a number of crossing structures and a conveyance system or another improvement are needed. The *Drainage Master Plan*, which is being updated, will identify potential improvements and establish an implementation schedule.

Increases in impervious surfaces because of development have resulted in increased runoff and decreased water recharge. General Plan policies focus on minimizing runoff, especially during peak-flow periods; ensuring adequate drainage; and locating development to minimize damage from flooding. Strategies to address increased runoff include small-scale site water retention facilities, water harvesting, and detention ponds. One example of a water harvesting technique is the construction of storm-drain leach fields parallel to arroyos. Storm drains are perforated allowing the flow to seep back into the ground. A detention



Flood Zones

-  *Proposed Urban Area Boundary*
-  *100-Year Flood Zone*
-  *500-Year Flood Zone*
-  *Major Roads*



Scale in Miles

City of Santa Fe
GENERAL PLAN

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Figure 7-5

pond would hold back water and also help water to leach back into the ground. These systems have the following drawbacks: detention ponds tend to capture sediment thereby increasing erosion problems downstream and water harvesting has high capital costs.

7.5 PRIVATE UTILITIES

7.5.1 GAS SERVICE

Gas service for the greater Santa Fe area has been provided by the Gas Company of New Mexico since 1930. Gas Company of New Mexico customers in the service area are 89.7 percent residential, 9.7 percent commercial, and 0.6 percent public authority.

Gas Company of New Mexico Line Extension Policy

Gas Company of New Mexico extends its mainlines in accordance with its Rule 16, Extension of Mains. Gas Company of New Mexico estimates the cost of extension and gives a credit for residential customers for the cost of 150 feet of the mainline extension and three times the estimated annual cost of service revenue for commercial customers. For extensions where the estimated investment exceeds the credit allowance, an extension agreement is executed and payment of an advance for construction is required. The advance is the difference between the credit allowance and the estimated cost of extension.

Gas Company of New Mexico anticipates city and county growth by selectively increasing mainline pipe size to a size greater than necessary to serve the immediate customers. Gas Company of New Mexico rarely installs mainlines without customers' requests. According to Gas Company of New Mexico, the distribution system in Santa Fe is in excellent shape for projected growth for the next ten years. Capacity problems are not anticipated based on buildout projections.

7.5.2 ELECTRICAL SERVICE

Electrical service is provided to Santa Fe by the Public Service Company of New Mexico. The Santa Fe area is connected to the New Mexico transmission system by three 115 kV lines. Two of these lines function primarily as a source of electric service for the Santa Fe Area, the third line functions primarily as source to the Las Vegas and northern New Mexico areas. The three 115 kV lines are connected to the Zia switching station located on Richards Avenue south of Rodeo Road. At Zia there are three 115/46 kV transformers which are the source for electric service for the Santa Fe 46 kV electric system (Figure 7-6). Public Service Company of New Mexico anticipates that components of the electrical system in the Santa Fe area will need to be upgraded in the late 1990s due to the age of the existing electrical system and to meet the growing electric service requirements of the City of Santa Fe and the county.

One goal of this document is to preserve the historical appearance of neighborhoods (Figure 7-7). However, while underground electrical service is desirable from an aesthetic standpoint, it remains expensive due to many factors, including higher maintenance costs, decreased reliability, increased labor costs, etc.

Furthermore, the abundance of archaeological sites within the Urban Area may make underground extensions more costly and difficult to install in certain areas.

Electric and Magnetic Fields

Research conducted over the past decade has caused much debate over the health effects associated with electric and magnetic fields. Attention to this research and the presence of high voltage transmission lines in the Urban Area, has increased the awareness of the suspected, but unproved, threat of adverse health effects resulting from exposure to electric and magnetic fields. Electric fields are produced in electrical lines, because of the amount of voltage applied to a conductor. Electric field strength falls off dramatically with distance, and many objects, including trees and houses shield electric fields. The predominant amount of residential exposure to electric fields is a result of household appliance use.

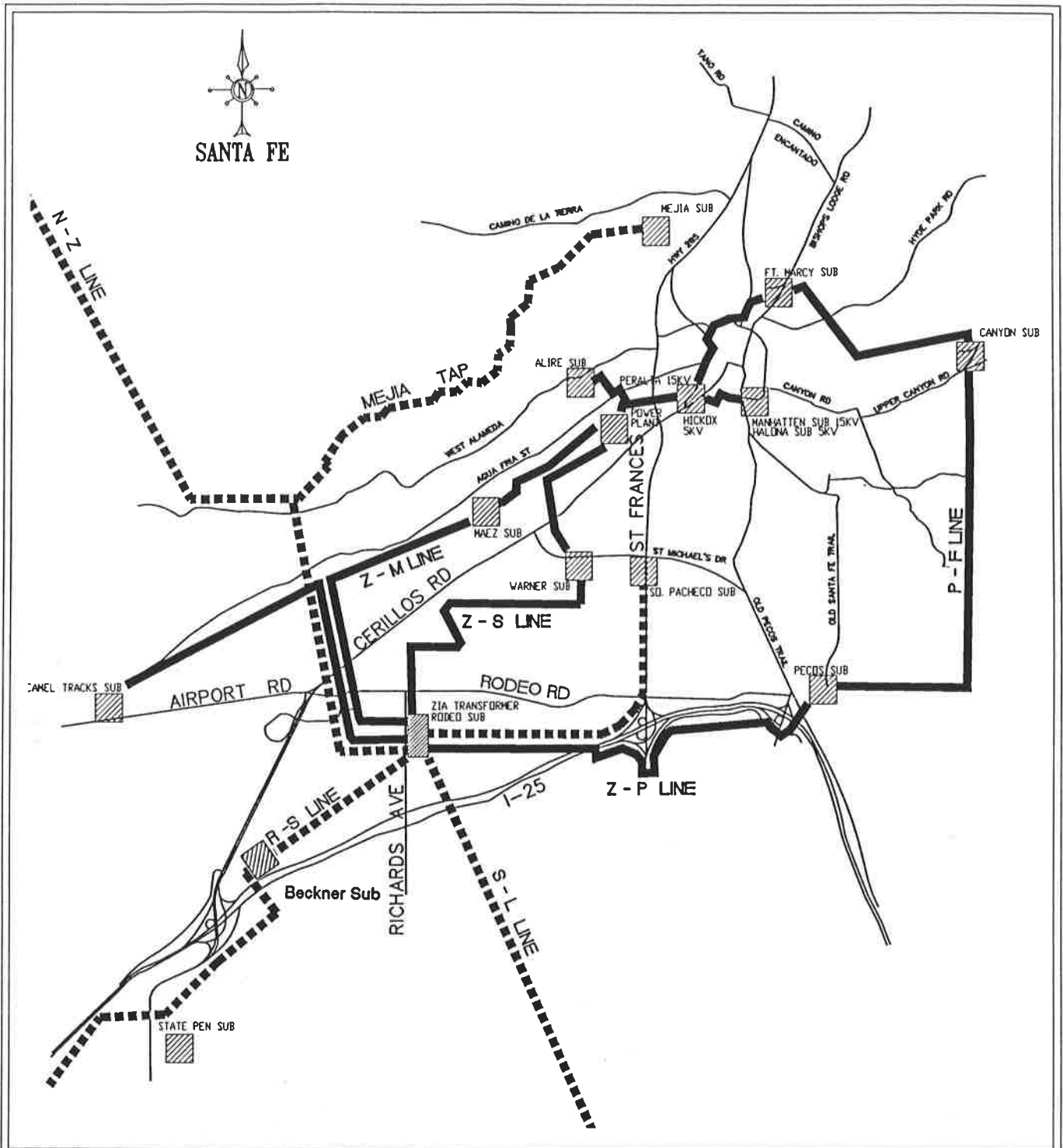
Magnetic fields are a result of the strength of the movement of electricity (current) through a conductor. As with electric fields, magnetic field strength decreases dramatically with distance from the source; this is especially true with appliances. Unlike electric fields, magnetic fields are not shielded by objects such as trees and buildings.

Exposure to electric and magnetic fields is an existing circumstance typical in urban communities. Whether the fields originate from appliances or high voltage transmission lines, public and scientific concern exists regarding exposure and the potential for human health effects. The relationship between electric and magnetic fields exposure and health effects has yet to be scientifically proven; results from the laboratory and epidemiological studies that have taken place are conflicting and inconclusive. Scientists to date have not found threshold values, dose-response, or proven physiological causative relationships that demonstrate physical effects from electric and magnetic fields.





Under the recommendation of scientists in the field, several utility companies and many jurisdictions have addressed the electric and magnetic fields issue through a policy of prudent avoidance as the best way of limiting exposure to electric and magnetic fields. The New Mexico Public Utilities Commission has not adopted regulations on the siting of high voltage transmission lines to reduce electric and magnetic fields exposure; however, Public Service Company of New Mexico does have an electric and magnetic fields Task Force which discusses scientific findings on the subject and monitors experience in other areas of the country.

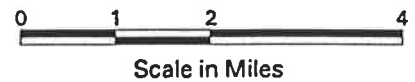
Not siting transmission lines near schools and day care centers shall be part of a "prudent avoidance" strategy. At present, Public Service Company of New Mexico does electric and magnetic fields measurements on site to help residents understand what their exposure to electric and magnetic fields is. Public Service Company of New Mexico also participated in the work of the city's Facility Siting and Environment Committee in 1990. The 1990 committee also established the following goals for the planning, siting, and remediation of electric facilities:

- **Health and Safety:** To protect human health and the environment;
- **Demand and Reliability:** To consider conservation alternatives and use realistic demand projections;
- **Economics and Aesthetics:** To consider economic and visual impacts on all sectors;



Electrical System Existing Service

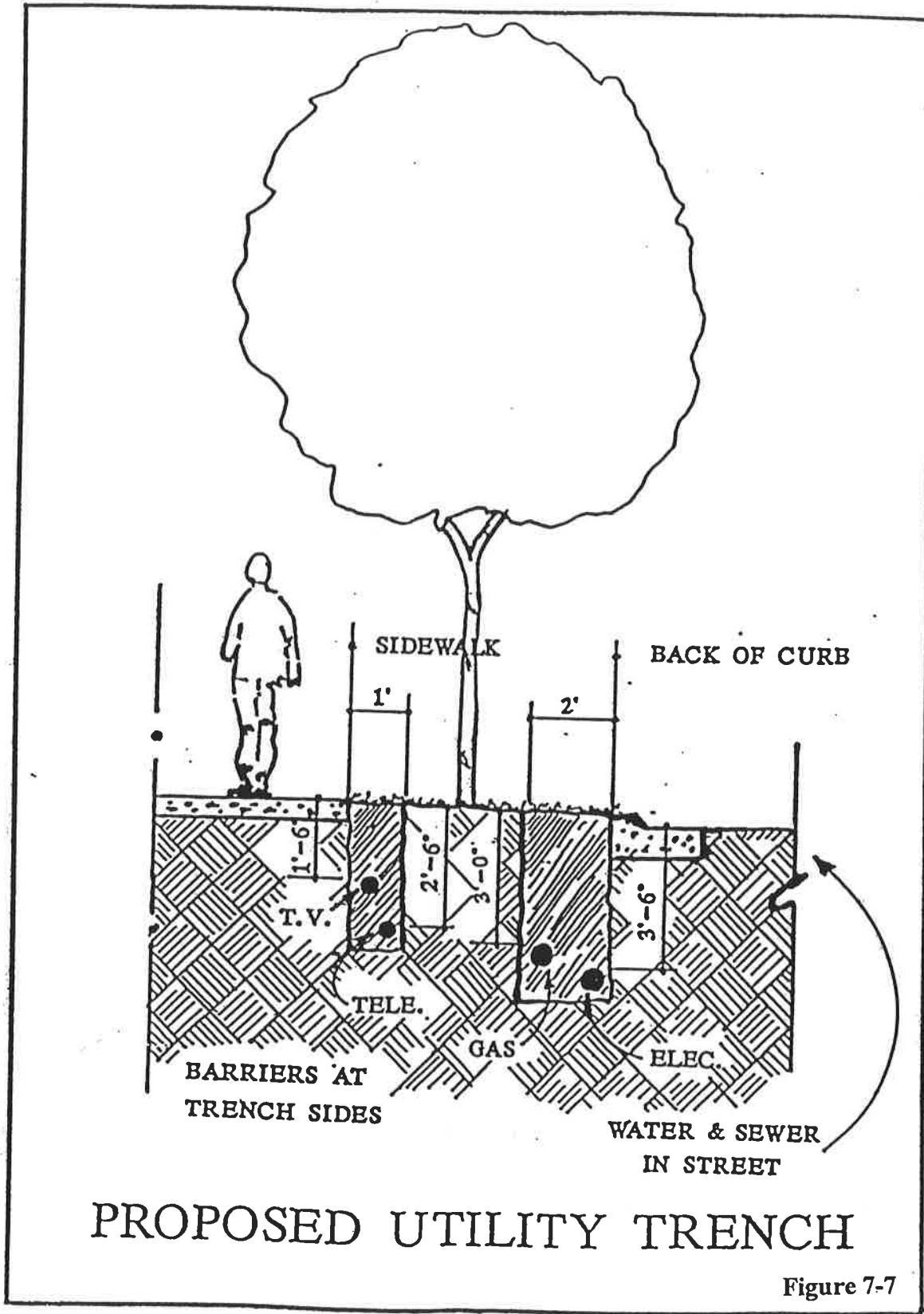
-  Proposed Urban Area Boundary
-  115KV Line
-  Substations & Switching Stations
-  Major Roads



City of Santa Fe GENERAL PLAN

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Figure 7-6



- **Processes:** To use processes which maximize efficiency, accountability, and public involvement; and
- **Accountability:** To implement the goals, objectives, standards, and processes described in this document in a way which maximizes public trust in the electric utility company and city and county governments.

The following at a minimum should be considered in the development of a facility plan:

- Projected electric and magnetic fields contour line profiles during operation of at least one preferred and one alternate route;
- Electric and magnetic fields contour lines for 2, 4, and 10 Mg (millgauss) for an existing powerline of similar characteristics as the preferred alternative;
- At a minimum, consideration and discussion of design alternatives with respect to electric and magnetic fields; “underground” alternative conductor configuration and phasing, tower height and diameter, and right-of-way width;
- Aesthetic design considerations including “undergrounding,” adjacent structures, character of the neighborhood and landscaping;
- Survey of all structures adjacent to the proposed right-of-way and their current uses;
- Estimate of population demographics within adjacent neighborhoods;
- Cost-benefit and risk analysis of alternate routes; and
- Design of a public participation and notification process.

7.5.3 ALTERNATIVE ENERGY AND CONSERVATION

Fossil-fuel burning, and forestry and agricultural practices are responsible for most of the man-made contributions to the gases in the atmosphere that act like a greenhouse to raise the Earth’s temperature: hence the term “greenhouse effect.” Most of the processes that produce greenhouse gases are common everyday activities such as driving cars, generating electricity from fossil fuels, using fertilizers, and using wood-burning stoves. Because so many of these activities are so ingrained in modern society, reducing emissions is a difficult task.

Environmentally, the potential effects of climate change are extensive. The Earth’s ecosystems, water resources, and air quality could all experience profound impacts; agriculture and forestry could be seriously affected.

In the nineties, there is now a growing interest in using energy resources more wisely than in the past. With concern about America’s dependence on foreign oil or the pollution caused by using fossil fuels, the idea of living within our means—sustainable energy use—continues to gain in popularity. In a larger context, the use of renewable resources promote greater self reliance, energy stability, and a cleaner environment for future generations.

7.5.4 SOLAR ENERGY

Solar energy has the greatest potential for meeting current and future energy demands. Solar collectors covering less than one percent of U.S. territory—one-tenth the area devoted to agriculture—could make more energy available than the United States consumes in a year.

Hydroelectric power has the least room for expansion, since about half of the river resources in the United States have already been developed, with much of the rest barred from development by federal environmental legislation.

Architecture in the twentieth century has been characterized by an emphasis on technology to the exclusion of other values. In the built environment this concern manifests itself in the materials we build with, such as plastics and synthetics. There is an existing dependence on mechanical control of the indoor environment rather than exploitation of climatic and other natural processes to satisfy our comfort requirements. In a sense, we have become prisoners of complicated mechanical systems, since windows must be inoperable and sealed in order for these systems to work. A minor power or equipment failure can make these buildings uninhabitable. Today, little attention is paid to the unique character and variation of local climate and building materials. One can now see essentially the same type building from coast to coast.

Today, there is a strong, new interest in passive solar heating and cooling systems because they simplify rather than complicate life. Passive systems are simple in concept and use, have few moving parts and require little or no maintenance. Also, these systems do not generate thermal pollution, since they require no external energy input and produce no physical by-products or waste. Since solar energy is conveniently distributed to all parts of the globe, expensive transportation and distribution networks of energy are also eliminated.

Since a building or some element of it is the passive system, the application of passive solar energy must be included in every step of a building's design. Whereas conventional or active solar-heating systems can be somewhat independent of the conceptual organization of a building, it is extremely difficult to add a passive system to a building once it has been designed.

7.5.5 WIND ENERGY

Wind turbines are a good example of the growing competitiveness of renewable energy technologies. The cost of electricity produced by modern wind turbines has declined from over 25 cents per kilowatt hour in 1981 to seven to nine cents per kilowatt hour today, and industry estimates suggest it could fall as low as four to six cents per kilowatt hour in five years. At the current price, wind power is competitive, or nearly so, with electricity generated by new fossil-fired power plants, and in the next millennium, it should be one of the least expensive sources of electricity, fossil or renewable.

Reliability problems affecting early wind-turbine designs have been largely resolved, and mature and well-maintained systems are available 95 to 98 percent of the time. Other renewable sources of electricity, such as solar-thermal electric-power plants and photovoltaic cells, also promise to become competitive within a decade, particularly if market demand grows to allow greater production of systems.

7.6 IMPACT FEES

The city and the county both currently assess new development for some of the costs associated with serving that development. The City of Santa Fe passed its Impact Fee

Ordinance in January 1991, and the county has recently developed impact fees to help pay for capital improvements related to fire protection.

7.6.1 NEW MEXICO DEVELOPMENT FEES ACT

The city and county must follow the requirements of the New Mexico Development Fees Act of 1993 (Section 5-81 et seq. NMSA 1978), which establishes the method by which local governments can legally exact fees from new development. The purpose of development, or impact, fees is to generate funds to pay for the capital costs of growth. New residences and businesses place demands on public roads, water and sewer systems, drainage systems, parks, and police and fire facilities. The Development Fees Act enables local governments to charge new development for the costs of the capital improvements needed to serve the new development.

Impact fees are not a panacea for all capital needs. They may only be used to pay for the cost of new capital projects that directly serve growth. They cannot be used to pay for renovations or for deficiencies in service levels to existing development. The projects funded by impact fees must serve the area for which the fees were collected, and the projects must be completed within seven years, at most, from the date the fees are collected. However, impact fees can help the city and county pay for projects that are needed to serve the growth of the community by having new growth pay for the capital facilities necessitated by that growth.

The city and county may structure fees to accomplish other objectives. Reduced fees for affordable housing, economic development projects, or development projects within infill areas or the urban boundary, are typical examples of projects for which fees are subsidized in other communities. Subsidies must be paid from other city or county revenues. The fees paid by one project cannot be used to offset subsidies to another project.

7.6.2 NEED FOR CITY/COUNTY COOPERATION

One of the General Plan themes is to ensure that existing residents and businesses are not burdened with the costs associated with new development. There is also a need for the city and the county to work jointly to establish an impact fee structure to prevent sprawl and ensure realization of the designated Plan uses. The city and county have a joint powers agreement in place and the county has adopted the city's Wastewater Ordinance as well.

Areas of cooperation that have relevance to impact fees include:

- **Water System.** The city and county could plan for areas to be connected to either the city or the county water systems, in order to implement development in the Urban Area. This agreement could then become the basis for assessment of impact fees to finance capital facilities for water supply needed to serve new growth in the Urban Area within the city and within the Extraterritorial Zone.

If the city and county collaborate to upgrade the Buckman well field, divert water from the Rio Grande, and upgrade the Buckman water supply line, the city and county could agree that the city would undertake this project, with funding provided at least partially by impact fees, if the required nexus between this upgrading and the increased need for water necessitated by growth is made. Impact fees could be assessed by the city both in the city and in the Extraterritorial Zone to be served by this upgraded water supply

system, pursuant to the Development Fees Act, if the city and county enter into a joint powers agreement for the purpose (See 5-8-3. C, NMSA 1978).

A joint powers agreement could also identify areas intended for annexation into the city which are now in the Extraterritorial Zone and could enable the city to assess and collect impact fees in these areas to extend water service to them, as long as service is provided within the seven years required by the Development Fees Act. If the identified area is not annexed or if service is not provided within seven years, then the fees collected would have to be refunded.

- **Wastewater.** The municipal wastewater treatment plant and sewage collection system serve a significant need in the Extraterritorial Zone. The city and the county have developed means for legal cooperation and enforcement of wastewater service related to applicable ordinances in the Extraterritorial Zone. The county includes in its code the same provisions the city has as the basis for sanitary sewer service. This ordinance provides for service in the Extraterritorial Zone within the city's sanitary sewer service area to be offered on the same basis as it is offered anywhere else in the city. The county, on the other hand, is committed by law to enforce city regulations in those parts of its jurisdiction served by city sewer.
- **Streets.** A joint powers agreement might also be utilized to enable the city to assess and collect impact fees in the Extraterritorial Zone for arterial roads, which are both in the city and in the Extraterritorial Zone and are impacted by growth in the Extraterritorial Zone.

The city and the county also have the option of participating in other areas, including fire protection, parks, and community services. The city will need to enter into a new joint powers agreement with the county or amend the current joint powers agreement, to enable impact fees to be assessed by the city in the Extraterritorial Zone.

7.6.3 SANTA FE CAPITAL IMPROVEMENT PROGRAM AND IMPACT FEES ORDINANCE

The City of Santa Fe passed its Impact Fee Ordinance in January 1991 and amended it in October 1991 and in June 1994. The ordinance includes an impact fee schedule, which was also adopted in 1991 and in June 1994. A revised draft incorporating the language of the Development Fees Act is being prepared, and revised land use assumptions and capital improvements plans meeting the requirements of the Act for wastewater, arterial roads, signalization, and parks, for which fees or dedications are assessed will follow adoption of the General Plan. This General Plan will contain broad land use assumptions to guide the city in preparing more detailed land use assumptions and the capital improvements plans needed to meet the Act's requirements (see Urban Area Staging Plan - Chapter 4).

The present ordinance does not provide a clear definition of an impact fee but states that the fee "relates to physical facilities or improvements which are non-exclusive and serve the entire city." State law requires that the impact fee be assessed for capital improvements that have a life expectancy of ten years or more. The city is currently charging impact fees for arterial roads, signalization, and wastewater facilities. The city could also charge impact fees for water supply, treatment and distribution facilities; storm water, drainage and flood control facilities; roads, bridges, bike and pedestrian trails, bus bays, rights-of-way,

landscaping, and any local components of state and federal highways; buildings for fire, police, and rescue, and essential equipment costing \$10,000 or more and having a ten-year life expectancy; as well as parks, open space trails, and related facilities (Sec. 5-8-2 NMSA 1978). The impact fee may also be used for preparing the capital improvements plan and up to three percent of the total impact fees collected may be used for administrative costs (Sec. 5-8-4 NMSA 1978).

The impact fee cannot be used for repairs and maintenance of capital improvements, administrative costs (with the exception of three percent noted above), improving the level of service of capital facilities, or libraries, community centers, construction of affordable housing, schools and projects for economic development, and employment growth (Sec. 5-8-5 NMSA 1978).

While there have been no New Mexico judicial opinions interpreting the validity of impact fee, the Development Fees Act provides a firm basis for the imposition of impact fees. The recent Supreme Court decision (*Dolan v Tigard*, 62 L W 4576, S.Ct. [1994]) has brought exaction under a greater level of scrutiny. However, the California Supreme Court recently decided the case of *Ehrlich v City of Culver City* (12 Cal. 4th 854 [1996]) which was remanded by the U.S. Supreme Court to be decided in light of its *Dolan* decision. *Ehrlich* addressed the issue of impact fees and stated that the *Dolan* test only applies to ad hoc fees imposed on discretionary basis and not to fees imposed generally or ministerially and according to a legislative scheme.

IMPLEMENTING POLICIES

7-1 WATER SUPPLY

Water Supply and Distribution

- 7-1-I-1 Maintain a hydrologic database for the Urban Area.
The Sangre de Cristo Water Services Division has a hydrologic model and is updating the database as part of its master plan update.
- 7-1-I-2 Plan for and construct infrastructure for the purpose of diverting water directly from the Rio Grande via shallow water galleries.
This project should be planned in coordination with Santa Fe County, Los Alamos, and the pueblos.
- 7-1-I-3 Purchase additional water rights as opportunities for utilizing bonds or other city resources occur, with debt service paid by impact fees in order to prevent future water shortages.
This could include additional water rights on the Rio Grande to add to the current rights to San Juan-Chama water.
- 7-1-I-4 Maintain at least a one-year "cushion" or 20% margin of water supply and rights to prevent shortages and ensure that water availability does not become a constraint to growth.
- 7-1-I-5 Prepare an annual report summarizing water supply and availability, and do not approve any annexation, master development plan, or subdivision unless there is an adequate distribution and treatment system.

Preparation of the annual report will be the responsibility of the city's Public Utilities Department. The report should be presented to the Planning Commission and forwarded to the Planning and Land Use Department to ensure that annexation approvals are in accordance with water availability.

- 7-1-I-6 Regulate use of wells within the city's service area.
- 7-1-I-7 To the extent possible, phase water infrastructure construction and water rights acquisition in order to minimize cost impacts to current and new ratepayers.
- 7-1-I-8 Maximize use of available surface water including treated effluent.
- 7-1-I-9 Preserve and reserve groundwater for peaking and prolonged drought through optimization of sustainable groundwater use.
- 7-1-I-10 Help protect existing water rights for users such as acequias and community wells through noncompetitive water development strategies and regional water planning.
- 7-1-I-11 Support projects that enhance and protect the Santa Fe water shed from the headwaters to Cochiti Lake.
- 7-1-I-12 Develop and implement a groundwater protection and management strategy.
- 7-1-I-13 Limit future installation of new domestic wells in areas that can be reasonably served by the municipal or regional water system.
- 7-1-I-14 Work cooperatively with the county to protect existing public and private wells from contamination.

Water Conservation

- 7-1-I-15 Reexamine the city's water conservation policy and consider a policy that encourages more extensive commercial water conservation. Revisit the rate structure and Utility Expansion Charges to consider rates and charges that relate more directly to the actual costs existing and new water customers impose on the water system.
- 7-1-I-16 Examine alternative methods for reducing water use and estimate the potential for water savings from each method.
This could include examining the feasibility of use of all surface runoff.
- 7-1-I-17 Determine the most cost effective way of utilizing the treated wastewater effluent, and fund the implementation of the *Treated Effluent Management Plan*.
With the understanding that there are downstream obligations that must be considered, no wastewater effluent should go unused.
- 7-1-I-18 Impose limitations on uses that consume large amounts of water, such as private swimming pools, fountains, and water-use intensive landscapes such as golf courses.
- 7-1-I-19 Fund the development, adoption, and subsequent annual updating of a comprehensive Water Resource Management Plan, which would include

elements such as conservation programs, reuse of treated wastewater effluent, aquifer and surface source protection, and water rights acquisition, with updates to the city's General Plan and regional plans as needed.

- 7-1-I-20 Establish specific indicators that would initiate water resource management plan updates and implementation of plan-required projects.
One such indicator should be the 10-percent production margin. The system would ideally have a 20-percent production margin at all times, but anytime this margin falls to 10 percent, infrastructure improvements would be implemented to restore it to 20 percent.
- 7-1-I-21 Coordinate the water resource management plan closely with the *Treated Effluent Management Plan* currently under development.

Regional Efforts

- 7-1-I-22 Work with the county to protect the aquifer shared by both jurisdictions by restricting drilling of new wells and requiring all new development to be hooked to the city's or county's water system.
- 7-1-I-23 Encourage the county to revise its performance-based subdivision criteria.
These have resulted in sprawl and further depletion of ground-water resources because the cumulative effect of development is not considered during project approval.
- 7-1-I-24 Promote partnerships and cooperative agreements with the county, neighboring pueblos, and state and federal authorities to participate in the development of a regional water plan to address regional water resource issues.

Extension of Services

- 7-1-I-25 Establish ordinances to govern the water service boundary.

Water Quality

- 7-1-I-26 Protect water quality in watercourses.
Adopt a comprehensive ordinance related to stormwater management.
Adopt a comprehensive wellhead protection plan.

Environmental

- 7-1-I-27 Permanently maintain and enforce comprehensive water-supply protection policies, including watershed, wellhead, and aquifer protection measures.

Acequias

- 7-1-I-28 Create an acequia restoration plan, including protection, and if appropriate, reintroduction of water flows.
- 7-1-I-29 Designate acequias as historic districts or landmarks, and enact zoning ordinances to ensure their protection.

This would impede the sale of water rights in acequias to persons who would subdivide the formerly agricultural land and use the water rights. While acequias meet the standards for protection under the Historic Districts Ordinance, they are not officially designated or shown on the zoning maps.

- 7-1-I-30 Oppose all water rights transfers with the State Engineer that contravene the historic designation of acequias.

7-2 WASTEWATER MANAGEMENT

Capital Improvements, Rehabilitation, and Extension of Service

- 7-2-I-1 Enhance wastewater treatment capacity at the Wastewater Treatment Plant's present site to meet future growth and regulatory demands.
- 7-2-I-2 As part of the regional growth management strategy, require annexation to the city as a condition of extending wastewater service to any area outside city limits, as long as this is not prohibited by law, ordinances, or joint powers agreements between the city and the county or preexisting agreements between the city and landowners.
- 7-2-I-3 Prohibit development that relies on on-site sewage treatment within city limits, where connection to the city system is physically viable.
- The use of low pressure sewers should be considered only for sites that could not be connected to the public gravity flow system, because of topography or an interceding arroyo.*
- 7-2-I-4 Maintain the *Wastewater Master Plan* as the implementing tool for the General Plan, and ensure that all capital improvements to wastewater collection and treatment systems are in accordance with the *Wastewater Master Plan*.
- Work toward completing the different phases of such a plan must continue to be funded as must any subsequent updates and revisions of this document. These updates must be made not less than once every five years.*
- 7-2-I-5 Maintain design and construction standards for water and wastewater infrastructure that reflect evolving technology and the city's needs.
- Update the standards at least once every five years. The revisions to such standards must be done by a mayor-appointed advisory board consisting of city staff and qualified members of the public.*
- 7-2-I-6 Prioritize rehabilitation of existing sewer lines in need of replacement or reconstruction.
- Between \$1.5 million and \$2 million a year are estimated to be needed for this purpose. In 1996, it was estimated that between 50 and 80 miles of the total 260 miles of sewers needed to be replaced or reconstructed. High on the replacement list are those lines which have been in service for five decades or longer, or are made of concrete or vitrified clay. Because of their condition, these lines are more likely to be intruded and obstructed by roots, or to leak raw sewage into the surrounding soil. Under the present conditions, these lines may represent a threat to the health and well-being of*

residents. In order to adequately finance sewer rehabilitation projects in a timely way, the projects should be included in the Wastewater Master Plan and CIP and financed from enterprise monies.

- 7-2-I-7 Develop an impact fee structure (or sewer infrastructure expansion fee for new development).

Contamination, Recharge, and Reuse

- 7-2-I-8 Prohibit the installation of sewers within 100-year flood plains.
- To protect the integrity of existing ephemeral water bodies (arroyos) and their natural beds, the construction of sanitary sewage collector lines should only take place outside of the 100-year flood plain of an arroyo.*

Maintenance

- 7-2-I-9 Incorporate programs and practices to improve the maintenance of the wastewater collection system.
- Plans and programs outlined in the existing Wastewater Master Plan include:*
- *Promote a local grease recycler;*
 - *Improve the "root intrusion program" which includes vapor rooting, high-pressure cleaning, and TV verification;*
 - *Control renegade inflow into the sewage collection system, particularly from storm water entering through manhole vents; and*
 - *Increase maintenance and replacement of large diameter sewer lines.*
- 7-2-I-10 Establish a program to gradually take over the maintenance of existing private sewers, upon the condition that the owners bring those sewers up to city standards, and establish a fund based on revenue for the purpose. Phase out existing septic systems wherever possible.

Funding

- 7-2-I-11 Establish impact fee or special assessment districts to fund the construction of large mains.
- While the installation of new collector lines should continue to be the responsibility of the land developer, master plan lines, or interceptors, should be the city's responsibility. However, developers must be responsible for fronting the cost of such lines (master plan lines), if their installation is required to be made ahead of schedule for the benefit of a given development project.*
- 7-2-I-12 Ensure that revenues generated by specific programs continue to be used exclusively to support the programs.
- An example of this is the Extra Strength Surcharge Program, designed to make the contributor of a special waste (grease) responsible for the abatement of problems caused by such a waste in the collection and treatment systems.*

- 7-2-I-13 Create special funds to cover costs associated with socially responsible development such as affordable housing, midway housing, homeless shelters, or customer directed waivers such as indigent utility bills.

The existence of such funds would prevent utility rate increases that are primarily linked to the utility's actual cost of providing waivers and exceptions.

- 7-2-I-14 Establish a method of reimbursement to developers for construction of sewers which serve other properties.

As an example, if a property owner at the end of a street develops ahead of the other lot owners on the street, he is required to extend the sewer main along the street to his property at his expense. When the other lot owners develop, there should be a method in place whereby they reimburse the developer of the sewer for a fair share of his outlay. As an alternative, the city extends sewer mains to individual properties and collects impact fees for the purpose.

7-3 SOLID WASTE AND RECYCLING

Master Planning

- 7-3-I-1 Prepare a comprehensive master plan to formulate the most coherent and efficient approach to waste management.

The plan should be developed in conjunction with Santa Fe County, which maintains its own collection and transfer system, and the Solid Waste Management Agency which manages the regional landfill. Furthermore, this plan should be revised on a regular basis, not less frequently than once every five years.

- 7-3-I-2 Incorporate specific projects outlined in the waste master plan in the city's CIP.

Once this plan is developed, implementation of specific projects contemplated in the plan must be funded adequately and executed.

Volume Reduction and Recycling

- 7-3-I-3 Ensure that solid waste fees include the cost of transferring and transporting the waste, in addition to the cost of waste disposal.

Historically, Santa Fe residents have not borne the true cost of waste disposal. These costs are now manifest in the acquisition, development, and operation of a regional landfill and of a transfer station that have been compliant with state and federal regulation from their inception. This policy will ensure that there will be increasing economic incentive to reduce the quantity of waste that must be collected or transported for disposal.

- 7-3-I-4 Maintain adequate fees to support operation and capital improvement of the city's transfer station and any other similar facility to be constructed in the future.

This is necessary because the city will have to pay to transport and dispose of the waste at the regional landfill. This would have the added benefit of potentially reducing the amount of waste received from persons residing or doing business outside of the city.

- 7-3-I-5 Adopt volume-based rates for waste collection.
Such rates are already in place to some extent for commercial users who must pay in proportion to the frequency and size of the refuse bins that are serviced by the city. Extension of these rates to residential users will convey an appropriate, similar waste reduction message.
- 7-3-I-6 Encourage private and public sector initiatives for waste reduction, and through a program of education, stimulate voluntary efforts, such as backyard composting and waste exchanges, in source reduction, and reuse.
- 7-3-I-7 Develop recycling programs for building materials, furniture, appliances, etc.

Transfer and Regulation

- 7-3-I-8 Incorporate both organic and inorganic recycling at transfer stations and future convenience centers.
- 7-3-I-9 Locate additional transfer facilities, including special purpose facilities such as convenience centers for yard waste, and sites for the reception of household hazardous wastes.
In order to reduce cross-town vehicular traffic, facilities should be located in different places in and around the city. The city should work with the county to undertake one or more joint ventures in the interest of cost efficiency.
- 7-3-I-10 Establish regulations for transportation of hazardous materials through the city.
Federal laws pre-empt much of the city's regulatory ability in this matter.
- 7-3-I-11 Ensure that businesses using or generating hazardous materials are regulated by the city.

7-4 STORMWATER MANAGEMENT

Drainage

- 7-4-I-1 Use the drainage master plan as the vehicle to address system deficiencies, accommodate future growth, and promote recharge and reuse.
Basin-wide recommendations can be adopted as part of the Drainage Master Plan.
- 7-4-I-2 Incorporate the use of porous materials (e.g., porous asphalt, modular paving, gravel, lattice concrete blocks and porous bricks) for outdoor spaces, paving, and sidewalks as part of public construction practices and the city's Engineering Standards.
If resources permit, retrofitting of existing areas can also be undertaken.

- 7-4-I-3 Incorporate stormwater management in the city's development review procedures, and ensure that new development has minimal impact on natural drainage channels, water quality, and flow capacity.
- 7-4-I-4 Do not permit a net increase in runoff during a 24-hour period on any development site.

This is an existing practice. Because soils in Santa Fe are generally dry, this requirement does not pose undue hardship. The city's Public Works Department should maintain a schedule showing the porosity of different paving materials for objective evaluation of projects.

Alternatives for achieving no net increase in 24-hour runoff could include recycling runoff through landscaping watering systems, and using retention/detention basins. Portions of parking lots, for example, can be designed to hold water for a few hours before gradually discharging after peaking of flow.
- 7-4-I-5 Analyze the feasibility of establishing stormwater assessment districts and include incentive programs for decreasing impermeable surfaces on public and private property.
- 7-4-I-6 Require environmentally sensitive design standards, such as those established in the *Santa Fe River Master Plan*, in the construction of public infrastructure impacting natural drainage systems. Natural arroyo systems should be allowed to continue to function as living absorption areas. Water detention, check dams, gabions and weirs are preferred solutions when stormwater improvements are required.
- 7-4-I-7 Establish review requirements so that all development projects having an impact on the rate and amount of run-off in the Santa Fe River be analyzed. Promote protection of a natural river character throughout the river's length.
- 7-4-I-8 Work cooperatively with the county to address and redress the problems with the Santa Fe River in the Agua Fria stretch, from Camino Carlos Rael to the sewage treatment plant.

Flooding

- 7-4-I-9 Continue to impose storm drainage performance standards established in Section 14-90.4 of the Land Development Laws, and enhance the standards based on innovative solutions.
- 7-4-I-10 As part of preparation of a plan for Downtown, incorporate stormwater management practices.
- 7-4-I-11 Incorporate procedures in the city's Subdivision Regulations to retire subdivisions located within the 100-year flood zone.

7-5 UTILITIES

- 7-5-I-1 In collaboration with utility and other providers, establish a program to place underground all new and replacement utilities for electric, telephone, cable, etc., including both main and service lines where feasible. The City of Santa

Fe will identify sources to pay for the placement of new and existing overhead lines underground.

- 7-5-I-2 Work with utility providers to present a “*Facility Plan*” for adoption after adoption of the General Plan.
- 7-5-I-3 Amend the Land Development Code to implement and enforce the adopted facility plan including policies based on the definition of “prudent avoidance.”
- 7-5-I-4 Monitor research on the health effects of electric and magnetic fields, and establish standards for siting high voltage lines.
- 7-5-I-5 Protect solar rights and access from encroachment of adjacent development wherever practicable.
- 7-5-I-6 Sponsor programs to encourage the appropriate development of solar energy in any application.
- 7-5-I-7 Encourage the utility companies to conserve resources and find innovative solutions to demand and environmental problems before investing in costly new facilities.
- 7-5-I-8 Fund educational programs on the conservation of energy, with strategies for buildings and the community as a whole including microclimate analysis, passive solar, natural ventilation, day lighting, shading, and “green” building materials.
- 7-5-I-9 Ensure that new development is as energy efficient as possible and consider tax incentives to promote solar and energy conservation.
- 7-5-I-10 Work with utility providers to establish protected corridors—preferred pathways to provide electrical and other needed utilities for current and future needs.

7.6 IMPACT FEES

Program Development

- 7-6-I-1 Work with Santa Fe County to prepare coordinated land use assumptions that meet the policy objectives of the Extraterritorial Zone and county general plans as well as the requirements of the Development Fees Act.
A single set of land use assumptions will accommodate annexations and a shifting Extraterritorial Zone, and will also enable the city to finance and construct capital facilities, such as roads, which are burdened by growth outside of the Urban Area and Extraterritorial Zone.
These assumptions should reflect specific city and county policies for where growth should occur, rather than current population and employment trends.
- 7-6-I-2 Identify additional capital facilities for which the city will assess impact fees.
Drainage, fire, police, and emergency services could be fully or partially funded by impact fees in areas in which new development has created a burden on existing facilities.

- 7-6-I-3 Restructure the city's Park Dedication Program to meet the requirements of the Development Fees Act and the policies.
- The current Parks Dedication Ordinance and provisions for cash in lieu of dedication is not based on land use assumptions or a CIP for parks.*
- 7-6-I-4 Prepare a CIP which meets the requirements of the Development Fees Act for each category of capital improvement for which it will assess impact fees. These plans may become "elements" of the city's existing CIP or may be separate documents. Reflect the land use assumptions and policies set forth in this Plan and implementing ordinances and the land use assumptions prepared pursuant to the Development Fees Act in the CIP for each category of capital improvements.
- It would be preferable for the city's CIP to be a single document with "elements" that meet the requirements for CIPs under the Development Fees Act. All information concerning financing of public facilities would then be in the same document. Other New Mexico communities which have adopted impact fees since the effective date of the Development Fees Act have separate CIPs for each category of facilities for which fees are assessed.*
- 7-6-I-5 Utilize impact fees to upgrade the recently acquired Sangre de Cristo Water System and to acquire additional water rights.
- The CIP for water supply should include a nexus between the need to upgrade and acquire water and growth projected in the Urban Area, the Extraterritorial Zone, and the county in the land use assumptions. While the Development Fees Act does not specifically authorize impact fees for purchasing water rights, a case can be made that water rights are a component of a water supply system.*
- 7-6-I-6 Design service areas for impact fees for specific categories of capital improvements, such as water, wastewater, neighborhood parks, pocket parks, and open space pockets to encourage infill, with higher fees assessed in service areas which are not already served by these and facilities and lower fees assessed in service areas which have improvements in place.
- Impact fees may be utilized as incentives to encourage new development to occur in areas in which capital improvements are already in place. The service area for facilities such as community parks and community open space arterial roads should be citywide and even regional.*

City/County Coordination

- 7-6-I-7 Coordinate the city/county planning for regional water supply, wastewater, solid waste management, arterial roads, drainage, regional parks and regional open space, and bicycle and pedestrian trails. Consider the appropriateness of regionalizing fire, police, and emergency medical services in the future.
- A regional planning effort for capital facilities could build upon the present planning process taking place in both the city and county, and could result in a more rational, cost efficient utilization of impact fees and other capital financing strategies. CIPs for capital facilities would be based on appropriate service areas, rather than political boundaries.*

- 7-6-I-8 Enter into a joint powers agreement with the county to enable the city to assess and collect impact fees in the Extraterritorial Zone for upgrading the Buckman well field, diversion of water from the Rio Grande, upgrading the Buckman water supply line, and acquiring water rights, improvements which will benefit both the city and county water systems.

A joint city-county CIP should indicate as a service area the entire area served by these specific facilities.

The CIP for water supply should attribute the need for upgrades to these facilities to new growth in the city and Extraterritorial Zone which they serve. The city and county should seek an amendment to the Development Fees Act which would enable the city and county, by joint powers agreement, to agree on a procedure for city facilities, such as arterial roads, which are burdened by growth in the county even beyond the Extraterritorial Zone.

- 7-6-I-9 Ensure that the joint powers agreement with the county would enable the city to assess impact fees for arterial roads in the city and Extraterritorial Zone which are impacted by growth in the Extraterritorial Zone.

- 7-6-I-10 Ensure that the joint powers agreement with the county would replace the use of development agreements for extension of city wastewater facilities into the Extraterritorial Zone, would comply with the Development Fees Act, and would enable the city to assess impact fees in the Extraterritorial Zone for wastewater facilities.

The development agreements currently used for extension of wastewater facilities into the Extraterritorial Zone do not comply with the Development Fees Act. The CIP for wastewater should identify a service area which includes all areas of the Extraterritorial Zone which will be served by the city system during the planning horizon.

Waiver of Impact Fees

- 7-6-I-11 Waive all or part of impact fees that would otherwise be assessed on housing which meets the affordability criteria of the Development Fees Act.

The city shall identify other sources of funding for capital facilities to serve affordable housing units. Impact fees collected from market rate housing shall not be used to replace the waived fees.

- 7-6-I-12 Waive all or part of impact fees that would otherwise be assessed on new businesses which fulfill the city's economic development strategy.

Community services and development of the General Plan and the city's economic development strategy identify the types of businesses which would create appropriate employment opportunities in the city and region. Impact fee waivers for such businesses, perhaps in combination with other incentives such as industrial revenue bonds or deferred taxes, would make Santa Fe more competitive with other communities in attracting these businesses.

- 7-6-I-13 Waive fees altogether or assess lower fees in identified "infill" areas which are already served with adequate capital facilities in order to attract development to these areas.

Impact fees may be utilized to implement a growth management strategy which encourages new development in areas which is already served with adequate public facilities. CIPs for capital facilities should provide an adequate rational basis for waiving fees in served areas.